KUSAM-MECO®

An ISO 9001:2008 Company

FLEXIBLE CURRENT PROBE / METER

Model - CA 3000 / CA 3000D

FEATURES :

- **Measurement Ranges:** 30A/300A/3000A AC
- **Output Sensitivity:**
  100mV/10mV/1mV per Amp (AC Coupled) **(CA 3000)**
- **Output Resolution (LCD Display):** 0.01A/0.1A/1A **(CA 3000D)**
- **18" flexible sensor fit around conductors up to 5.8"in diameter.**
- **TRMS Reading (CA 3000D)**
- **8.5mm coil diameter allows measurement in tight spaces. (Double insulated)**
- **1.8m (6 ft) cable.**
- **Flashing LED low battery indicator. (CA 3000)**
- **Dual banana plug termination for direct input into DMM. (CA 3000)**
- **EN 61010, CAT IV 600V , CAT III 1000V.**

CA 3000D

Preliminary Data

CA 3000

ELECTRICAL SPECIFICATIONS :

Model	CA 3000	CA 3000D
Measuring Ranges	30A / 300A / 3000A	30A / 300A / 3000A
Output Sensitivity	100mV/10mV/1mV per A (AC coupled)	0.01A / 0.1A / 1A
Accuracy (45/65Hz)	±1% of full scale	3% ± 5 digits
Frequency Range	45 ~ 500Hz	45 ~ 500Hz
Phase Error (45/65Hz)	< ±1°	< ±1°
Position Sensitivity	± 2.8% of full scale	± 2.8% of full scale
Noise	0.03A / 0.075A / 0.5A	----------
Low battery	Indicated by a red LED	▭+
Power Indicate	Indicated by a green LED	----------
Power Supply	UM-4 or AAA 1.5V battery x 2 (alkaline battery)	

Note: All Specification are Subject to change without prior notice.

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KUSAM-MECO®

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AC FLEXIBLE CURRENT PROBE
CA 3000

CE

⚠ Safety Information

Read first,
To ensure safe operating and service of this current clamp, follow these instructions:

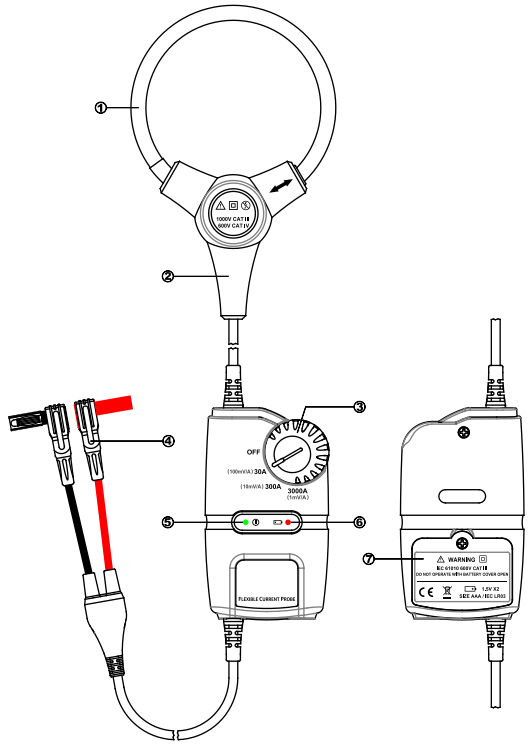
- Read the operating instructions and follow all safety instructions before using this instrument.
- Do not operate the tester if the body of meter or the current probe looks broken.
- Check the main function dial and make sure it is at the correct position before each measurement.
- Always de-energize the circuit under test before installing flexible probe measuring head. Always inspect the electronics unit, connecting cable, and flexible probe for damage before using this product.
- Always connect the clamp unit to display device before installing the flexible measuring head.
- Exercise extreme caution when measuring live system with voltage greater than 60V DC or 30V AC.
- To avoid false readings, replace the battery as soon as possible, when " ▭+ " LED light on.
- Always wear protective clothing and gloves if hazardous live parts are present in the installation where the measurement is carried out.
- Never use the probe on a circuit with voltages higher than 600V CAT III.
  CAT III equipment is designed to protect against transients in equipment in fixed equipment installations, such as distribution panels, feeders and short branch circuits, and lighting systems in large buildings.

Environmental Conditions:

- Altitude up to 2000 meters.
- Operating temperature/humidity: 0°C~50°C, <80% RH, non-condensing
- Storage temperature/humidity:-10°C ~ 60°C, <70% RH, battery removed
- Pollution Degree: 2

Symbol Definition & Button Location

Name of Parts & Position:



① Flexible current probe
② Probe coupling
③ Power on / Range switch
④ Banana plugs for output
⑤ Green LED - power indicator
⑥ Red LED - low battery indicator
⑦ Battery compartment cove

Explanation of Symbols:

⚠ Attention! Refer to operation instructions.
Do not apply around or remove from HAZARDOUS LIVE conductors.
Product is protected by double insulation.
CE Conforms to relevant European standards

Approvals: CE **EN61010**
1000V CAT III / 600V CAT IV (Probe)
1000V CAT II / 600V CAT III (Box)

Maintenance

⚠ WARNING & CAUTION!

- Before opening the battery door, disconnect flexible current probe and never use the meter if the battery door is open.
- Always inspect the unit, connecting cable, and flexible probe for damage before use.
- To avoid electric shock, keep the clean and free of surface contamination.
- Make sure the flexible probe, connecting cable, and electronics enclosure are dry before further use.
- To avoid contamination or static damage, do not touch the circuit board without proper static protection.

REMARK:

If the meter is not going to be used for a long time, take out the battery and do not store the meter in high temperature or high humidity environment.
When taking current measurement, keep the cable at the center of the clamp to get more accurate test result.
Repairs or servicing not covered in this manual should be performed only by qualified person.

CLEANING:

Periodically wipe the case with a dry cloth and detergent.
Do not use abrasives or solvents on this instrument.

Specifications

GENERAL SPECIFICATION:

Probe Cable Length(s): 254mm (10")/ 458mm (18")

Probe Cable Diameter: 8.5mm (nominal)

Cable Length (Clamp to Box): 1.8m (6 ft)

Cable Length (Box to Output): 0.5m

Dimension (Box): 120mm(L)x70mm(W)x26 mm(H); 4.7"(L)x2.8"(W)x1"(H)

Weight: Approx.325g (include battery)

ELECTRICAL SPECIFICATION:

(At 23±5°C, ≦80 %RH, conductor located at the center of the flexible loop)

Measuring Ranges: AC: 30A/300A/3000A

Output Sensitivity: AC: 100mV/10mV/1mV per Amp.

Accuracy (45-65Hz): ±1% of full scale

Bandwidth(-3dB): 10Hz to 10KHz

Phase Error (45-65Hz): < ±1°

Position Sensitivity: Refer to Figure 1.

Noise: 0.03A/0.075A/0.5A

Power Supply: UM-4 or AAA 1.5V battery x2

Power Indicator: Indicated by a green LED

Low Battery: Indicated by a red LED

Battery Life: Approx.120Hours(alkaline battery)

Load Impedance: 10KΩ minimum

Temperature Coefficients:
Add 0.1 x specified accuracy for each degree C above 28°C or below 18°C

Position Sensitivity

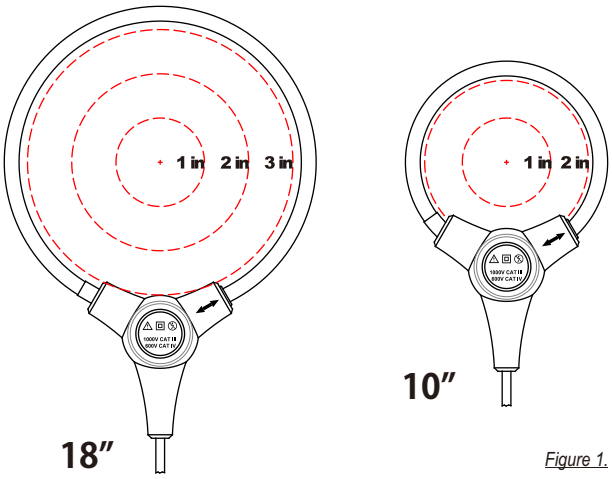


Figure 1.

	Distance from optimum	Error
18" Flexible Current Probe	1 in	± 1.0%
	2 in	± 2.0%
	3 in	± 3.0%

	Distance from optimum	Error
10" Flexible Current Probe	1 in	± 1.0%
	2 in	± 2.5%

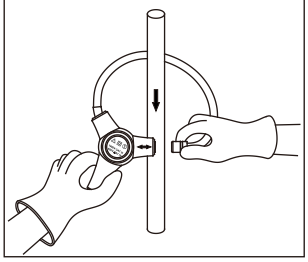
Note:
Measurement uncertainty assumes centralized primary conductor at optimum position, no external electrical or magnetic field, and within operating temperature range.

Measuring Instruction

> ⚠ *Always use appropriate equipment for personal protection. Do not use the flexible current probe to measure bare conductors unless wearing protective clothing and gloves suitable for high voltage work.*

- To activate unit, move the rotary switch from " Off " position to the required measuring range.
- Connect the banana plugs to the measuring meter. Select the desired range. If the value of current being measured is unknown, first select the highest range and then reduce accordingly.
- Connect the flexible probe around the conductor (See Figure 2.)
- Center the conductor perpendicularly inside the flexible probe area.

Figure 2. Connecting the flexible probe around the conductor



- Observe the current value and waveform on the instrument's display.
- The flexible current probe can be used to AC current up to 3000A.
- The probes provide a 3V full scale AC output proportional to the current being measured with three selectable ranges.
- Select the corresponding sensitivity (.. mV/A) on your ScopeMeter or multimeter. If you are using a multimeter, select an appropriate AC voltage range.
- Don't select AC+DC range for measurement.

If the current probe is used with a multimeter, the actual current value can be calculated from the displayed AC voltage value.

Example 1 :
Current Probe set to 1 mV/A (3000A range).
Multimeter displays 2.000Vac rms.

$$\text{actual current} = \frac{\text{display value}}{\text{sensitivity}} = \frac{2.000\text{V}}{1\text{mV/A}} = \frac{2000\text{mV}}{1\text{mV/A}} = 2000\text{A ac rms}$$

Example 2 :
Current Probe set to 10 mV/A(300A range).
Multimeter displays 2.000Vac rms.

$$\text{actual current} = \frac{\text{display value}}{\text{sensitivity}} = \frac{2.000\text{V}}{10\text{mV/A}} = \frac{2000\text{mV}}{10\text{mV/A}} = 200\text{A ac rms}$$

Example 3 :
Current Probe set to 100 mV/A(30A range).
Multimeter displays 2.000Vac rms.

$$\text{actual current} = \frac{\text{display value}}{\text{sensitivity}} = \frac{2.000\text{V}}{100\text{mV/A}}$$

$$= \frac{2000\text{mV}}{100\text{mV/A}} = 20\text{A ac rms}$$

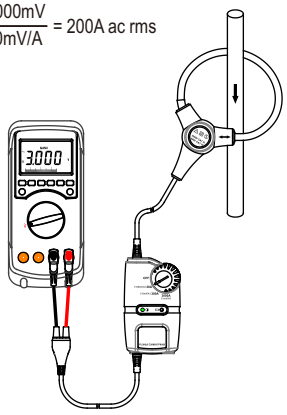
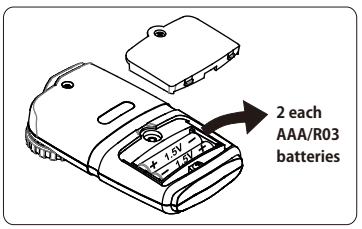


Figure 3. Measurement Setup

Replacing Battery

1. When battery light is on, the battery needs to be replaced.
2. Remove the flexible current probe from any measuring object.
3. Switch the main dial to "OFF".
4. Open the battery door with a screwdriver.
5. Replace the old batteries with two new 1.5V (AAA Size) batteries.
6. Close the battery door and fasten the screw.



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KUSAM-MECO®

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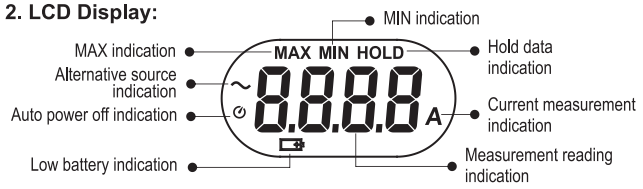
TRMS FLEXIBLE CURRENT METER

CA 3000D

CE

2. LCD Display:



⚠ Safety Information

Read first, to ensure safe operating and service of this current clamp, follow these instructions:

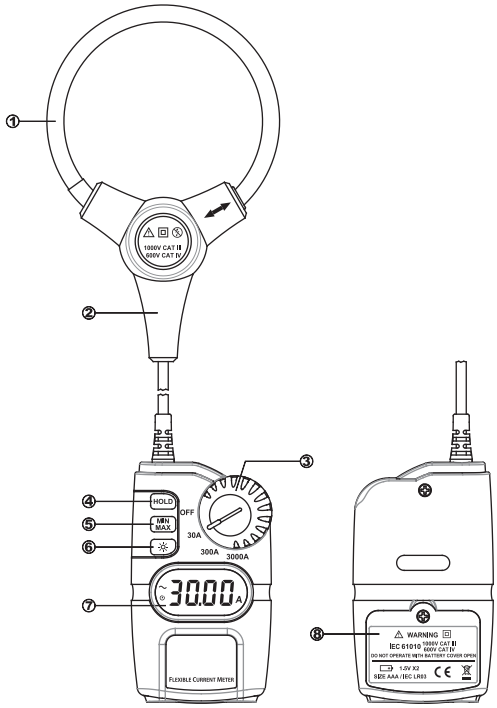
- Read the operating instructions and follow all safety instructions before using this instrument.
- Do not operate the tester if the body of meter or the current probe looks broken.
- Check the main function dial and make sure it is at the correct position before each measurement.
- Always de-energize the circuit under test before installing flexible probe measuring head. Always inspect the electronics unit, connecting cable, and flexible probe for damage before using this product.
- Exercise extreme caution when measuring live system with voltage greater than 60V DC or 30V AC.
- To avoid false readings, replace the battery as soon as possible, when " ▭+ " symbol appears.
- Always wear protective clothing and gloves if hazardous live parts are present in the installation where the measurement is carried out.
- Never use the probe on a circuit with voltages higher than 600 V CATIII. CATIII equipment is designed to protect against transients in equipment in fixed equipment installations, such as distribution panels, feeders and short branch circuits, and lighting systems in large buildings.

Environmental Conditions:

- Altitude up to 2000 meters.
- Operating temperature/humidity: 0°C~50°C, <80% RH, non-condensing

Symbol Definition & Button Location

1. Name of Parts & Position:



① Flexible current probe	④ Data hold button	⑦ LCD display
② Probe coupling	⑤ MIN/MAX button	⑧ Battery compartment cove
③ Range switch	⑥ Backlight button	

- Storage temperature/humidity:-10°C ~ 60°C, <70% RH, battery removed
- Pollution Degree: 2

Explanation of Symbols:

⚠ Attention! Refer to operation instructions.

Do not apply around or remove from HAZARDOUS LIVE conductors.

Product is protected by double insulation.

CE Conforms to relevant European standards

Approvals: CE **EN61010** 1000V CAT III / 600V CAT IV

Maintenance

⚠ WARNING & CAUTION!

- Before opening the battery door, disconnect flexible current probe and never use the meter if the battery door is open.
- Always inspect the unit, connecting cable, and flexible probe for damage before use.
- To avoid electric shock, keep the clean and free of surface contamination.
- Make sure the flexible probe, connecting cable, and electronics enclosure are dry before further use.
- To avoid contamination or static damage, do not touch the circuit board without proper static protection.

REMARK:

If the meter is not going to be used for a long time, take out the battery and do not store the meter in high temperature or high humidity environment.
When taking current measurement, keep the cable at the center of the clamp to get more accurate test result.
Repairs or servicing not covered in this manual should be performed only by qualified person.

CLEANING:

Periodically wipe the case with a dry cloth and detergent.
Do not use abrasives or solvents on this instrument.

Specifications

GENERAL SPECIFICATION:

Digital Display: 4 digits LCD display with maximum reading 3150

Over Load: When the signal larger than the maximum will be shown **-OL-**

Sample Rate: 2 times/sec

Low Power Indication:
When the battery is below the proper operation range, will appear on the LCD display.

Power Source: UM-4 or AAA 1.5V battery x 2

Auto Power Off:
If there is no key or dial operation for 15 minutes, the meter will automatically power off to save battery consumption. The symbol indicates the function is enabled.

Disable-Auto Power Off:
To disable the function, press the "Hold" button and keep it pressed while powering on the meter. The indicator will not be displayed.

Dimension (Meter): 120mm(L)x70mm(W)x26 mm(H); 4.7"(L)x2.8"(W)x1"(H)

Probe Cable Length(s): 254mm (10")/ 458mm (18")

Probe Cable Diameter: 8.5mm (nominal)

Cable Length (Probe to Meter): 1.8m (6 ft)

Weight: Approx.286g (include battery)

ELECTRICAL SPECIFICATION:

(At 23±5°C, ≦80 %RH, conductor located at the center of the flexible loop)

Measuring Ranges: 30A/300A/3000A

Resolution: 0.01A/0.1A/1A

Accuracy (45-500Hz): ±3% ±5digits

Position Sensitivity: Refer to Figure 1.

Power Supply: UM-4 or AAA 1.5V battery x2

Battery Life: Approx.120Hours(alkaline battery)

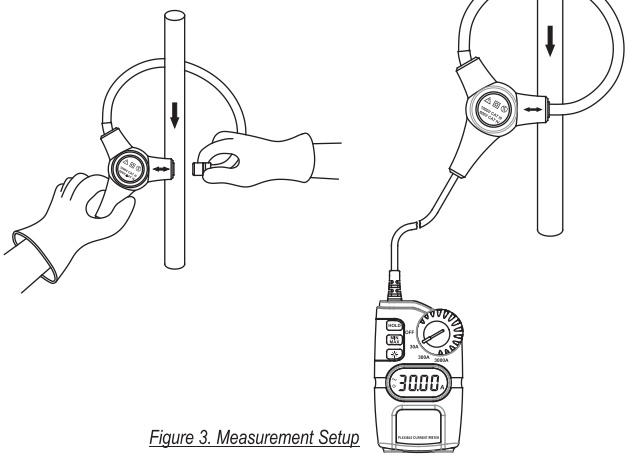
Temperature Coefficients:
Add 0.1 x specified accuracy for each degree C above 28°C or below 18°C

Measuring Instruction

> ⚠ *Always use appropriate equipment for personal protection. Do not use the flexible current probe to measure bare conductors unless wearing protective clothing and gloves suitable for high voltage work.*

- To activate unit, move the rotary switch from the "off" position to the required measuring range.
- Select the desired range. If the value of current being measured is unknown, first select the highest range and then reduce accordingly.
- Connect the flexible probe around the conductor (See Figure 2.)
- Center the conductor perpendicularly inside the flexible probe area.
- Observe the current value on the LCD.

Figure 2. Connecting the flexible probe around the conductor



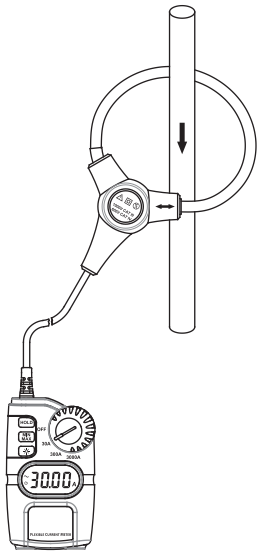


Figure 3. Measurement Setup

Position Sensitivity

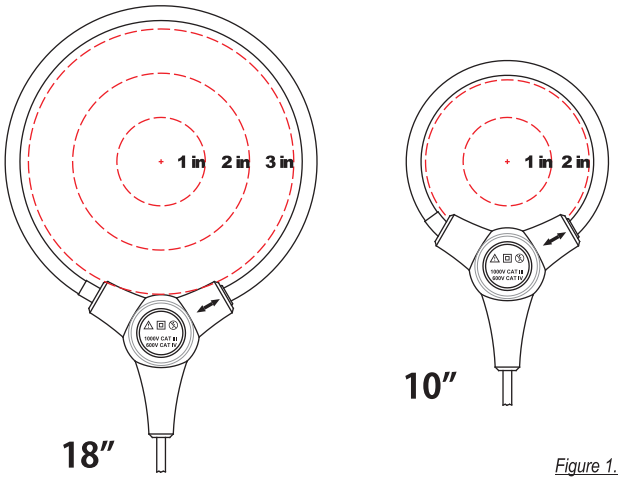


Figure 1.

	Distance from optimum	Error
18" Flexible Current Probe	1 in	± 1.0%
	2 in	± 2.0%
	3 in	± 3.0%

	Distance from optimum	Error
10" Flexible Current Probe	1 in	± 1.0%
	2 in	± 2.5%

Note:
Measurement uncertainty assumes centralized primary conductor at optimum position, no external electrical or magnetic field, and within operating temperature range.

Button Instruction

- **Back Light Button:**

  Press the button to turn on back-light.
  Press the button again to turn off back-light. The back-light will also be turned off automatically after 30 seconds to extend battery life.

- **Hold Button:**

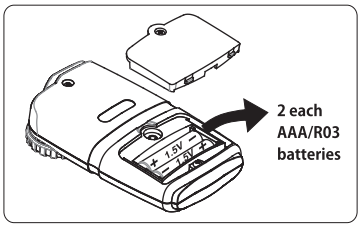
  Press the **HOLD** button to hold data.
  Press the **HOLD** button again to release held data.

- **MAX/MIN Button:**

  Press the **MAX/MIN** button to enter the Max/Min mode. Press the **MAX/MIN** button, to read Max, Min, and current reading in sequence. Press the **MAX/MIN** button for 2 seconds, to exit the Max/Min mode.

Replacing Battery

1. When the battery voltage drops below proper operation range the " " symbol will appear on the LCD display and the battery needs to be replaced.
2. Remove the flexible current probe from any measuring object.
3. Switch the main dial to "OFF".
4. Open the battery door with a screwdriver.
5. Replace the old batteries with two new 1.5V (AAA Size) batteries.
6. Close the battery door and fasten the screw.



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